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DOREEN M. HARRIS
President and CEO

August 21, 2023

Ann Bailey
ENERGY STAR Product Labeling
United States Environmental Protection Agency
Office of Air and Radiation
Washington D.C. 20460
MostEfficient@energystar.gov

NYSERDA Comments on the EPA's ENERGY STAR Most Efficient 2024 Proposed Criteria

Dear Ms. Bailey:

The following comments are submitted on behalf of the New York State Energy Research and Development Authority (NYSERDA). NYSERDA is a public benefit corporation that offers information and analysis, innovative programs, technical expertise, and support to help New Yorkers increase energy efficiency, save money, use renewable energy, and reduce reliance on fossil fuels. NYSERDA's mission is to advance clean energy innovation and investments to combat climate change, improving the health, resiliency, and prosperity of New Yorkers and delivering benefits equitably to all. NYSERDA works to help implement New York State's nation-leading climate agenda, which is the most aggressive climate and clean energy initiative in the nation; New York is advancing an orderly and just transition to clean energy that creates jobs and continues fostering a green economy.

Thank you for the opportunity to submit comments to the Environmental Protection Agency (EPA) on the ENERGY STAR Most Efficient 2024 proposed criteria. The ENERGY STAR Most Efficient Program provides significant market value to consumers in New York by featuring the most efficient products across a range of important product categories. NYSERDA respectfully submits these comments for EPA's consideration.

Across all product categories that use refrigerants, NYSERDA urges EPA to mandate reporting of refrigerant type

NYSERDA is encouraged that EPA is requiring reporting of refrigerant type for room air conditioners as part of the 2024 Most Efficient requirements, however there are a number of other products within the Most Efficient portfolio that use refrigerants where EPA is only encouraging voluntary reporting. Information on refrigerants is increasingly important to avoid potential market disruptions as new state and federal regulations are being established to phase out high global warming potential refrigerants.[1] The Most Efficient program is uniquely well suited to require this information as it

[1] Such as the US EPA's AIM Act https://www.epa.gov/climate-hfcs-reduction/background-hfcs-and-aim-act and the forthcoming NY Department of Environmental Conservation regulations https://www.dec.ny.gov/regulations/119026.html

provides the opportunity for products to stand out within their respective categories. Transparency on refrigerants type will help support states, including New York, that are working to achieve greenhouse gas reduction mandates. While EPA has requested voluntary reporting of refrigerant type, the rates of reporting have not been high. In the case of dryers, for example, only 6 of the 34 Most Efficient products did report the type of refrigerant they used (all of which were either heat pump or hybrid heat pump products), and only 9 of the 578 total dryers on the full ENERGY STAR list have refrigerant information reported.[2] Across all Most Efficient product categories that use refrigerants—including heat pumps, clothes dryers, dehumidifiers, freezers, geothermal heat pumps, and refrigerators—we urge EPA to take the same approach as proposed for room air conditioners to require reporting of refrigerant type.

NYSERDA strongly supports EPA's proposed incorporation of a heating mode test for room air conditioners

NYSERDA strongly supports EPA's proposal to develop a heating mode test procedure for room air conditioners with heating capability. Consistent with our previous comments submitted both EPA and Department of Energy (DOE) in 2022,[3] NYSERDA expects the market to grow for room air conditioners with heating functionality. For example, the New York City Housing Authority (NYCHA), in partnership with the New York Power Authority (NYPA) and NYSERDA, has committed to purchasing 30,000 window heat pump units through the Clean Heat for All program.[4] These units are cold climate window heat pumps and address the growing need for portable solutions for both heating and cooling. Additionally, the California Emerging Technology program (CalNEXT) is undertaking a project focused on investigating the heating performance of 110V/120V heat pumps (including window heat pumps such as room air conditioners).[5] As New York seeks to decarbonize space heating, we expect that room air conditioners with heating modes will grow in importance.

Regarding the development of a test method on heating performance, NYSERDA supports a part-load heating metric based on the provisions set forth in DOE's Appendix M1. However, since room air conditioners are tested in calorimetric chambers and are subject to methods of test set forth in ASHRAE Standard 16, NYSERDA would like to raise the following issues for EPA's consideration to support the transition from existing psychrometric test chamber heating testing, as detailed in Appendix M1, to the room air conditioner heating mode test method structure as follows:

- Psychrometric rooms can generally ensure accuracy of test results for medium-sized to large-sized products. NYSERDA's evaluation of current ENERGY STAR certified room air conditioners suggests that a small percentage of products (approximately 1.8% or 25 models out of 1355 on the ENERGY STAR list) have cooling capacities

[2] This analysis was done using the data on the ENERGY STAR Dryers Qualified Product List in August 2023, https://www.energystar.gov/productfinder/product/certified-clothes-dryers/
[3] https://www.energystar.gov/products/room_air_conditioner_specification_version_5_2, https://www.regulations.gov/comment/EERE-2014-BT-STD-0059-0041
[4] https://www.nyserda.ny.gov/About/Newsroom/2022-Announcements/2022-08-02-Governor-Hochul-and-Mayor-Adams-Announce-Clean-Heat-for-All
[5] https://calnext.com/resources/hvac

below 6,000 Btu/h, none of which indicated heating mode functionality.[6] Based on our review, if smaller room air conditioners do not have a heating mode per the ENERGY STAR product finder, the uncertainty around test chamber type may be irrelevant. Measurement uncertainties are expected to be higher for products in psychrometric chambers than normally acceptable uncertainty levels, but those products constitute a small fraction of ENERGY STAR certified models.

- Appendix M1 specifies optional cyclic heating mode tests. ASHRAE Standard 16 does not include test provisions to conduct cyclic tests, so a room air conditioner tested in a calorimetric chamber would not be able to satisfy the cyclic heating mode tests prescribed under Appendix M1, unless the room air conditioner is moved into a psychrometric chamber.
- Calorimetric chambers are designed to perform heating mode tests at higher outdoor dry bulb temperatures such as 47°F. While tests at slightly lower temperatures than 47°F may be possible in calorimetric chambers, a psychrometric approach to testing would be necessary for heating mode tests at lower temperatures such as 17°F and 5°F.
- Psychrometric chambers necessitate inlet and outlet duct requirements – conditions that do not exactly match the installed operation of room air conditioners with heating functionality.

Regarding the 35°F heating mode test condition prescribed in Appendix M1, a calorimetric approach to such a test may face challenges since calorimeter chambers are designed to be balanced whereas the heating mode test at 35°F is designed to be transient; a modified version of the approach in Appendix M1 is likely needed if room air conditioners with heating function are to be tested at this temperature condition. NYSERDA looks forward to EPA's leadership in establishing a heating mode test for room air conditioners and we look forward to supporting that effort in partnership with EPA.

NSYERDA generally supports the proposed criteria for 2024 ENERGY STAR Most Efficient and hopes that EPA will update the efficiency levels of several categories that remained unchanged next year

Ceiling Fans: NYSERDA supports EPA's proposed increases to the current efficiency levels. DOE's recent notice of proposed rulemaking (NOPR)[7] proposed raising the minimum federal efficiency standards for ceiling fans, which will shift the full market towards more efficient fans. The levels proposed by EPA for 2024 Most Efficient will support the proposal from DOE and efficiency advances for this technology.

Clothes Washers: NYSERDA has reviewed the justification to not update the clothes washer Most Efficient levels for 2024; however in March 2023, DOE released a Residential Clothes Washer standard NOPR[8] where DOE proposed new standards at Efficiency Level 3, which is the current ENERGY STAR Most Efficient level for front load models. As that standard becomes effective, the entire clothes washer market is expected to shift towards higher efficiency products.

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[6] This analysis was performed using data from the ENERGY STAR product finder: https://www.energystar.gov/productfinder/product/certified-room-air-conditioners

[7] https://www.regulations.gov/document/EERE-2021-BT-STD-0011-0032

[8] https://www.regulations.gov/document/EERE-2017-BT-STD-0014-0060

We thus recommend that ENERGY STAR revisit the clothes washer efficiency levels for the 2025 Most Efficient program and consider increasing the Most Efficient levels in advance of compliance with the standard, which is expected 3 years after the final rule. Additionally, we recommend EPA improve the reporting on combination washer and dryer products such that the efficiency status of each product is more clearly defined within the Most Efficient reporting requirements.

Computer Monitors: NYSERDA supports ENERGY STAR revising the current criteria for computer monitors. In 2022, New York adopted state appliance standards for computer monitors which align with those in California and several other states.[9] As these standards became effective on June 26, 2023, NYSERDA expects the New York computer monitors market to transition to more efficient products. Raising the efficiency levels for the Most Efficient product category will continue to push the efficiency of these products forward.

Dehumidifiers: NYSERDA supports EPA's proposed approach to increase the efficiency levels for dehumidifiers for 2024 with the additional request to require reporting of refrigerant type for products using refrigerants. In addition to updating the criteria for standalone dehumidifiers, NYSERDA recommends EPA also consider dehumidification features and performance criteria for conventional space conditioning products such as ducted and ductless air-source heat pumps. NYSERDA believes EPA has a viable framework to set sensible heat ratio criterion to help consumers better understand the value of a heat pump's dehumidification capabilities, which would be complementary to the existing heat pump efficiency metrics. The Most Efficient heat pump specification can use the provisions set forth in Section 4.5 of Appendix M1 to Subpart B of 10 CFR Part 430 (Appendix M1) to appropriately recognize products with excellent dehumidification capabilities as a mandatory reporting requirement.

Dishwashers: NYSERDA has reviewed the proposed updates for dishwashers and supports EPA's proposed approach.

Dryers: NYSERDA has been supporting ENERGY STAR Most Efficient Heat Pump dryers through the ENERGY STAR Retail Products Platform (ESRPP) since 2023. NYSERDA is supportive of the proposed updates to continue to drive efficiency for these products. So far in New York, we have found that heat pump dryers are increasingly available and are being stocked in stores, but still make up a small portion of sales. About 1.7 percent of total dryers sold in New York meet the current ENERGY STAR Most Efficient levels. NYSERDA requests that EPA require reporting on the type of refrigerant used in all Most Efficient dryers, which was proposed as an optional field.

Geothermal Heat Pumps: NYSERDA supports EPA's proposal to separate the criteria for geothermal heat pumps from air-source heat pumps to more clearly recognize these products. In accordance with EPA's proposed approach for room air conditioners, NYSERDA recommends that EPA require reporting of the refrigerant type for ENERGY STAR Most Efficient 2024 geothermal heat pumps.

Refrigerators-Freezers and Freezers: NYSERDA supports EPA's proposal to adjust certain subcategories of refrigerators and freezers for the 2024 Most Efficient criteria. Similar to the case for clothes washers, as DOE is updating the federal standard for refrigerators and freezers, we urge EPA to respond to the forthcoming final rule for the 2025 Most Efficient

[9] https://www.nyserda.ny.gov/All-Programs/New-York-State-Appliance-and-Equipment-Efficiency-Standards/Current-Standards

program and adjust levels accordingly. NYSERDA has been supporting ENERGY STAR Most Efficient refrigerators and freezers through the ENERGY STAR Retail Products Platform (ESRPP) since 2023. So far in New York, we have observed that Most Efficient refrigerators and freezers are widely available and are being purchased at increased rates. To date, about 16 percent of refrigerators-freezers sold in New York meet the current ENERGY STAR Most Efficient levels. NYSERDA requests that EPA include mandatory reporting of refrigerant type for all products in this category.

Room Air Cleaners: NYSERDA recently established state standards for room air cleaners which align with the ENERGY STAR V1.2 specification levels.[10] These standards are advancing efficiency in this product category in New York; however, the efficiency levels represented by the 2023 ENERGY STAR Most Efficient criteria for room air cleaners were ambitious, so NYSERDA respects EPA's determination that a change in efficiency level is not yet warranted. NYSERDA has also participated in joint stakeholder negotiations to support the establishment of a new federal test procedure and forthcoming standard for room air cleaners.[11] NYSERDA strongly supports the alignment of the Most Efficient requirements with the new federal test procedure, changing the metric from Smoke Clean Air Delivery Rate (CADR) to PM2.5 CADR. With compliance for a federal minimum efficiency standard anticipated by the end of 2023, NYSERDA encourages EPA to revisit this category to determine if an increase in efficiency makes sense for the 2025 Most Efficient program year.

Ventilating Fans: NYSERDA recently established state standards for residential ventilating fans which became effective on June 26, 2023.[12] These standards are advancing efficiency in this product category in New York and align with existing standards in several other states. The proposed updates to the 2024 Most Efficient criteria raise the efficiency levels for this product category and fully align with the market trends of increase efficiency for ventilating fans. NYSERDA supports EPA's proposal.

Windows and Sliding Glass Doors: NYSERDA supports the proposed changes to the Most Efficient criteria as well as the Version 7 specification. While the proposed changes are mostly to the South and do not directly impact New York, improving the building envelope is important for comfort in all areas of the country. NYSERDA also supports simplifying the criteria as proposed. This is an important product category and NYSERDA supports EPA's efforts to ensure that products that meet the performance criteria can be recognized as part of the Most Efficient program.

Ducted and Ductless Air Source Heat Pumps: In addition to incorporating a sensible heat ratio as detailed in the dehumidifier comment, NYSERDA supports EPA's proposal to align the SEER2, EER2 and HSPF2 criteria for ductless heat pumps with tax credit levels. While NYSERDA understands EPA's rationale for pausing the installation benefits requirement for ductless units in 2024, NYSERDA recommends EPA to work with industry to develop standardized diagnostic codes to facilitate quality installations of ENERGY STAR products in the field. NYSERDA is aware of at least one

[10] https://www.nyserda.ny.gov/All-Programs/New-York-State-Appliance-and-Equipment-Efficiency-Standards/Current-Standards
[11] https://www.regulations.gov/comment/EERE-2021-BT-STD-0035-0016
[12] https://www.nyserda.ny.gov/All-Programs/New-York-State-Appliance-and-Equipment-Efficiency-Standards/Current-Standards

draft industry standard previously issued by the Air Conditioning Contractors of America (BSR/ACCA 15 OBD Standard) on onboard diagnostic codes for such products.[13] The foreword of BSR/ACCA 15 OBD Standard states:

> "A consistent on-board diagnostics code nomenclature reduces the need for field practitioners to cross-reference multiple error code directories from within a manufacturer's equipment lineup as well as across the spectrum of product producers. This can reduce field installation and servicing errors to better ensure that installed equipment capacity and efficiency are as designed."

NYSERDA supports EPA's other proposals including the cessation of the ENERGY STAR Most Efficient recognition of central air conditioners in 2024, and the reorganization of criteria to separate geothermal heat pumps from air-source heat pumps. NYSERDA recommends EPA require reporting of the refrigerant type for ENERGY STAR Most Efficient 2024 ducted and ductless air-source heat pumps.

Thank you for the opportunity to provide comment on this ENERGY STAR specification. NYSERDA seeks to be a strong partner of the EPA as we work together to advance state and national decarbonization priorities. Please do not hesitate to reach out to discuss any of these matters further.

Sincerely,

Chris Corcoran
Team Lead – Codes, Products, & Standards
New York State Energy Research and Development Authority (NYSERDA)

[13] See ACCA's 2018 announcement here.